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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,572	03/31/2004	Ilya Mironov	MSI-1921US	9406

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EXAMINER	
PAN, JOSEPH T	

ART UNIT	PAPER NUMBER
2135	

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/815,572

Applicant(s)

MIRONOV ET AL.

Examiner

Joseph Pan

Art Unit

2135

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/25/05&amp;3/31/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10, 13-25, 28-37, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reeds, III (U.S. Patent No. 5,724,427), hereinafter "Reeds", in view of Greene et al. (U.S. Patent No. 6,646,639 B1), hereinafter "Greene".

Referring to claims 1, 18, 31:

i. Reeds teaches:

A method comprising:

sequentially storing a plurality of results provided by a stream cipher output rule in a first, second, and third storage units (see figure 3; column 7, lines 20-31; and column 8, lines 12-18 of Reeds);

providing a plurality of results from a pairing function, the pairing function pairing individual values from the first and third storage units that are at least a threshold value apart (see figure 3; column 7, lines 20-31; and column 8, lines 12-18 of Reeds); and

upon reaching the threshold value of the output rule results, serially rotating contents of the first, second, and third storage units (see figure 3; column 7, lines 20-31; and column 8, lines 12-18 of Reeds).

However, Reeds does not specifically mention the threshold value.

ii. Greene teaches a method for improved occlusion clustering in graphics systems wherein Greene disclose using the threshold value to determine whether to perform an arithmetic operation (see figure 13, elements 1338, 1342; column 24, line 57-59; and column 25, lines 10-15 '...new coefficients for the polygon's edge and plane equations', of Greene).

iii. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Greene into the method of Reeds to use a threshold value to determine whether to perform an arithmetic operation.

iv. The ordinary skilled person would have been motivated to have applied the teaching of Greene into the system of Reeds to use a threshold, because Reeds teaches performing arithmetic operations on a rotational state vector (see figure 3, element 310 'rotational state vector'; and column 5, lines 48-53 'In particular, the method may be used as a stream cipher in which one or more values of elements in a rotational state vector, used to encrypt a plain byte to yield a cipher text byte, are changed as a function of one or more of: the cipher text byte or the plain text byte.', Reeds, emphasis added), and Greene teaches use a threshold value to determine whether to perform an arithmetic operation. Therefore, Greene's teaching could enhance Reeds' system.

Referring to claims 2, 19, 32:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the correlation (see column 41, lines 60-61 of Greene).

Referring to claims 3, 20, 33:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the threshold value (see column 24, line 58 of Greene).

Referring to claims 4, 21, 34:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the first, second and third storage units (see column 8, lines 12-18 of Reeds), and memory device (see column 7, line 15 of Reeds).

Referring to claim 5, 22, 35:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the shifting (see column 27, lines 10-18 of Greene).

Referring to claims 6, 23, 36:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the pairing (see column 5, lines 22-23 of Greene), and the table (see column 7, line 10 of Reeds).

Referring to claims 7, 24:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the stream cipher keystream generator (see figure 3; and column 7, lines 20-31 of Reeds).

Referring to claims 8, 25:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the first and third storage units (see column 8, lines 12-18 of Reeds).

Referring to claims 9, 16, 29:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the initialization (see column 5, line 58 of Reeds).

Referring to claims 17, 30:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the delay (see column 42, line 12 of Greene).

Referring to claims 10, 37:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the recursive algorithm (see column 3, line 13 of Greene).

Referring to claims 13-14, 28, 40:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the fourth storage unit (see column 8, lines 12-18 of Reeds).

Referring to claim 15:

Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the permutation (see column 9, line 46 of Reeds).

3. Claims 11-12, 26-27, 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reeds, III (U.S. Patent No. 5,724,427) in view of Greene et al. (U.S. Patent No. 6,646,639 B1), and further in view of Petersen et al. (U.S. Patent No. 7,170,997 B2), hereinafter "Petersen".

Referring to claims 11-12, 26-27, 38-39:

i. Reeds and Greene disclose the claimed subject matter: a stream ciphering method (see claim 1 above). They further disclose the update rule (see column 50, lines 6-10 of Greene).

However, they do not specifically mention the random walk.

ii. Petersen teaches a method of performing numerical computation wherein Petersen discloses the random walk (see column 41, lines 48-49; and column 42, lines 3-9 of Petersen).

iii. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Petersen into the method of Reeds and Greene to utilize the random walk.

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iv. The ordinary skilled person would have been motivated to have applied the teaching of Petersen into the system of Reeds and Greene to utilize the random walk, because Reeds and Greene teach the updating rule (see column 50, lines 6-10 of Greene), and "In this test, the sequence is similarly to the cumulative sums test transferred into a random walk. The number of visits to certain states (values the cumulative sum can hold), which the random walk potentially passes through, is used to characterize the sequence as either random or non-random." (see column 42, lines 3-9 of Petersen).

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Pan whose telephone number is 571-272-5987.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached at 571-272-3859. The fax and phone numbers for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Joseph Pan

July 31, 2007

  
KIM VU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100